

REMARKS/ARGUMENTS

Information Disclosure Statement

Applicant hereby respectfully requests acknowledgment of McKeown, et al., "The Bay Bridge: High Speed Router" (reference AC) which was originally cited in the Information Disclosure Statement filed on June 12, 2000, received by the Office June 14, 2000.

Attached herewith are:

- (1) a copy of the PTO Form 1449 filed on June 12, 2000 with the Examiner's partial acknowledgment on May 13, 2003 and another acknowledgement (with strikethrough) on October 10, 2003.
- (2) a new PTO Form 1449 citing McKeown, et al., "The Bay Bridge: High Speed Router" for the Examiner's initial and supplemental acknowledgement.
- (3) a copy of McKeown, et al., "The Bay Bridge: High Speed Router."

Please send a copy of the PTO form 1449 of (2) above with the Examiner's initial indicating supplemental acknowledgement of the cited art.

Claim Status and Amendment to the Claims

Claims 1-68 are now pending. No claims stand allowed.

Claims 1, 11, 21, 31, and 49 have been amended to further particularly point out and distinctly claim subject matter regarded as the invention. The text of claims 2-10, 12-20, 22-30, 23-48, 50-54 is unchanged, but their meaning is changed because they

depend from amended claims. The amendment also contains minor changes of a clerical nature. No "new matter" has been added by the amendment.

New claims 55-68 have been added by this amendment and also particularly point out and distinctly claim subject matter regarded as the invention.

Claim Objections

Claim 49 stands objected to because of minor informalities. Claim 49 has been amended so as to depend from claim 31 in accordance with the Examiner's suggestion. With this amendment, withdrawal of the objection to the claims is respectfully requested.

The 35 U.S.C. §103 Rejection

Claims 1-54 stand rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Duffield et al. (U.S. Pat. No. 6,452,933) in view of Ganz et al. (U.S. Pat. No. 6,049,549), among which claims X and XX are independent claims.

This rejection is respectfully traversed.

According to M.P.E.P. §2143,

To establish a *prima facie* case of obviousness, three basic criteria must be met. First there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest *all the claim limitations*. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in the applicant's disclosure (*emphasis added*).

Furthermore, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

Claim 1 defines a method for controlling congestion in a networking device having a plurality of input interface queues. The claimed method includes (a) estimating the data arrival rate on each of the plurality of input interface queues in each sampling state, (b) determining, for each polling state associated with a respective sampling state, the sequence in which the plurality of input interface queues should be polled and the quantity of data to be processed from each of the plurality of input interface queues each time the input interface queue is polled, using the estimated data arrival rate on each of the plurality of input interface queues, and (c) polling, in each polling state, the plurality of the input interface queues in accordance with the determined sequence and quantity, as recited in claim 1 as amended.

In the Office Action, the Examiner alleges that column 2, lines 9-43 and column 3, lines 13-31 of Duffield discloses the claimed “estimating the data arrival rate on each of the plurality of input interface queues.” The Examiner specifically equates Duffield’s “guaranteed bandwidth for the queue” with the claimed “estimate of the data arrival rate.” The Examiner also alleges that Duffield’s “weights associated with respective queues” are “determined by the estimated arrival rates” and “the weights dictate the amount of data to be processed.” However, Applicants respectfully disagree for the following reasons.

Duffield describes the Weighted Fair Queuing scheme where a weight is associated with each queue such that service offered to each queue while they have packet waiting is *always* in proportion to the weights (column 2, lines 17-22 of Duffield, *emphasis* added). Thus, the guaranteed bandwidth of Duffield is a specific proportion of the total bandwidth (packets per second). The term “guaranteed” in Duffield means that so long as a queue has packets waiting, the packet in the queue are always processed at the specific rate (packets per second) proportional to the predetermined weight associated with that queue (column 2, lines 22-35 of Duffield). In order to provide the “guaranteed” bandwidth for the guaranteed quality of service (QoS) (column 1, lines 27-30 of Duffield), the weight must be predetermined in accordance with the required QoS, and also the corresponding guaranteed bandwidth must not be changed due to traffic. Thus, in Duffield, the weights of the queue are determined “based on long-term requirements” (column 2, line 59 thereof). On the other hand, the data arrival rates are changing during data communication, depending on the number of packets or the amount of data arriving per time period. If the guaranteed bandwidth changes depending on fluctuation in the traffic, such a bandwidth is no longer “guaranteed.” Therefore, Duffield’s predetermined weights and corresponding guaranteed bandwidths are inconsistent with the claimed data arrival rates that are estimated in each sampling state.

Accordingly, Duffield’s guaranteed bandwidths are not estimated in each sampling state, as recited in claim 1, and Duffield’s weights associated with queues are not determined based on any data arrival rates or estimation thereof, as recited in claim 1.

In addition, since the weights in Duffield are predetermined based on such long-term requirements, and the guaranteed bandwidth is *always* proportional to the associated weight, as discussed above, there is no need in Duffield to *estimate* the “guaranteed bandwidth” at all. Thus, actually, Duffield teaches away from estimating the guaranteed bandwidth, the alleged data arrival rate, if any. Furthermore, although it might be true that “the weights dictate the amount of data to be processed” in Duffield, since the weights are predetermined and fixed in Duffield, as discussed above, such weights (the alleged quantity of data) are not determined for each polling state associated with a respective sampling state, as recited in claim 1.

In addition, it should be noted that Duffield’s description in column 3, lines 13-54 only concerns redistribution of the excess bandwidth when one or more queue do not have packets waiting, and thus it does not change the nature of the alleged “guaranteed bandwidth” and “weights associated with queues” discussed above. This is because Duffield’s “redistribution scheme always provides the minimum guarantees required for each of the connections and satisfies worst case fairness measures” (column 3, lines 30-33 thereof), and “the schemes work like fair queuing when there is no excess bandwidth (column 3, line 19-20 thereof). Furthermore, none of the redistribution policies (Longest delay first, Least time to overflow, and Least time to overflow with leaky buckets) in Duffield uses data arrival rate or involves estimation of such data arrival rates.

As the Examiner correctly acknowledges, Duffield also fails to disclose determining, for each polling state associated with a respective sampling state, the sequence in which the plurality of input interface queues should be polled, using the estimated data arrival rate on each of the plurality of input interface queues, as recited in claim 1.

Regarding Ganz:

The Examiner alleges, however, that Ganz discloses determining, for each polling round, the sequence in which the plurality of inputs should be polled using the estimated data arrival rate on each of the plurality of inputs, by specifically equating Ganz's "allocated communication resources" with the claimed estimated data arrival rate. Applicants respectfully disagree for the following reasons.

The allocated resources in Ganz, the alleged data arrival rate, is *initially determined* by the resource manager such that the session's allocated rate can be satisfied by the resulting polling pattern (column 9, lines 50-53 of Ganz, *emphasis added*). Accordingly, similarly to Duffield, the allocated resource of Ganz is predetermined and thus is not estimated for each polling state associated with a respective sampling state, as recited in claim 1. Thus, the Examiner's allegation that the claimed estimated data arrival rate is equivalent to allocated communication resources is not correct.

In addition, neither of the cited references teaches or suggests the sampling state and the polling state corresponding to the sampling state, as recited in claim 1.

Accordingly, Duffield, whether considered alone or combined with or modified by Ganz, does not teach any of (a) estimating the data arrival rate on each of the plurality of input interface queues in each sampling state, (b) determining, for each polling state associated with a respective sampling state, the sequence in which the plurality of input interface queues should be polled and the quantity of data to be processed from each of the plurality of input interface queues each time the input interface queue is polled, using the estimated data arrival rate on each of the plurality of input interface queues, and (c) polling, in each polling state, the plurality of the input interface queues in accordance with the determined sequence and quantity, as recited in claim 1.

Claims 11, 21, and 31 also include substantially the same distinctive feature as claim 1. Accordingly, it is respectfully requested that the rejection of claims based on Duffield and Ganz be withdrawn. In view of the foregoing, it is respectfully asserted that the claims are now in condition for allowance.

Dependent Claims

Claims 2-10, 32-33, and 38-40 depend from claim 1, claims 12-20, 34-35, and 41-43 depend from claim 11, claims 22-30, 36-37, and 44-46 depend from claim 21, claims 47-54 depend from claim 31, and thus include the limitations of respective independent claims. The argument set forth above is equally applicable here. The base claims being allowable, the dependent claims must also be allowable at least for the same reasons.

In view of the foregoing, it is respectfully asserted that the claims are now in condition for allowance.

Request for Allowance


It is believed that this Amendment places the above-identified patent application into condition for allowance. Early favorable consideration of this Amendment is earnestly solicited.

If, in the opinion of the Examiner, an interview would expedite the prosecution of this application, the Examiner is invited to call the undersigned attorney at the number indicated below.

The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 50-1698.

Respectfully submitted,
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Limited Recognition under 37 CFR §10.9(b)

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